

**Notice of Allowability**

Application No.

10/089,208

Applicant(s)

BENTHIN, MARCUS

Examiner

Qutub Ghulamali

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 2/20/2006.

2.  The allowed claim(s) is/are 11-15 which are now renumbered as claims 1-5 respectively.

3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)  All    b)  Some\*    c)  None    of the:

1.  Certified copies of the priority documents have been received.

2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.

(a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached  
1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.

(b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of  
Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 11/7/05
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

*Jean B. Corrielus*  
JEAN B. CORRIELUS  
PRIMARY EXAMINER  
3-17-06

## **DETAILED ACTION**

### *Acknowledgment*

1. This Office Action is responsive to the Amendment/Remarks filed on 02/20/2006.

### *Response to Amendment/Remarks*

2. Applicant's amendment/remarks filed February 20, 2006, with reference 6-10 have been fully considered. However, an examiners amendment is considered necessary to correct for deficiencies in the claims. The examiners amendment follows.

## **EXAMINER'S AMENDMENT**

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. William Valance on 3/3/2006 and 3/14/2006.

The application has been amended as follows:

## **IN THE CLAIMS:**

~~ml~~ The claims 6-10, filed on 02/20/2006, have been cancelled. Claims 11-15 have been added as follows:

-- 11.(new) A method of correlating discrete-time signal segments, said method comprising the steps of:

a) providing a signal for transmission from a transmitter to a receiver, said signal including a predetermined signal section; and  
b) storing the predetermined signal section in the receiver as an errored hierarchical sequence  $\tilde{h}$ , wherein said errored hierarchical sequence  $\tilde{h}$  is represented

by a hierarchical sequence  $h$  and an error sequence  $h_e$  as follows:

$$\tilde{h}_{(k)} = h(k) + h_e(k), \quad k = 0, \dots, m-1,$$

wherein  $m$  is a natural number and defines a length of the sequences,  $h$ ,  $h_e$  and  $\tilde{h}$ , and wherein elements of  $h$  and  $h_e$  have a range of values:  $\{-\alpha, +\alpha\}$  and elements of  $\tilde{h}$  have a range of values:  $\{-2\alpha, 0, +2\alpha\}$ , wherein  $\alpha$  represents any real or complex number;

c) correlating the errored hierarchical sequence  $\tilde{h}$  stored in step b) with a received signal received in the receiver to determine a position of the predetermined signal section in the received signal, said correlating comprises forming a sum of a correlation between the received signal and said hierarchical sequence  $h$  and a correlation

between the received signal and said error sequence  $h_e$ .

12. (new) The method as defined in claim 11, further comprising decomposing the  
erroned hierarchical sequence  $\tilde{h}$  into a sum of the hierarchical sequence  $h$  and the  
error sequence  $h_e$  so that the error sequence  $h_e$  contains as few of said elements as  
possible that are different from zero.

13.(new) A method of correlating discrete-time signal segments, said method  
comprising the steps of:

- a) providing a signal for transmission from a transmitter to a receiver, said signal  
including a predetermined signal section; and
- b) storing the predetermined signal section in the receiver as an erroned  
hierarchical sequence  $\tilde{h}$ , wherein said erroned hierarchical sequence  $\tilde{h}$  is represented  
by the hierarchical sequence  $h$  and the error sequence  $h_e$  as follows:

$$\tilde{h}(k) = h(k) + h_e(k), \quad k = 0, \dots, m-1,$$

wherein  $m$  is a natural number and defines a length of the sequences,  $\tilde{h}$ ,  $h$   
and  $h_e$ , and wherein elements of  $\tilde{h}$  and  $h$  have a range of values:  $\{-\alpha, +\alpha\}$  and  
elements of  $h_e$  have a range of values:  $\{-2\alpha, 0, +2\alpha\}$ , wherein  $\alpha$  represents any real or  
complex number;

- c) correlating the erroned hierarchical sequence  $\tilde{h}$  stored in step b) with a  
received signal received in the receiver to determine a position of the predetermined  
signal section in the received signal, said correlating comprises forming a sum of a

correlation between the received signal and said hierarchical sequence  $\tilde{h}$  and a

correlation between the received signal and said error sequence  $\underline{h}_e$ ;

wherein a correlation  $v(k)$  of said errored hierarchical sequence  $\tilde{h}$  with the received signal  $s(k)$  is given by

$$\begin{aligned} v(k) &= \sum_{j=0}^{m-1} \tilde{h}(j) \bullet s(k+j) = \sum_{j=0}^{m-1} [h(j) + h_e(j)] \bullet s(k+j) \\ &= u(k) + u_e(k) \end{aligned}$$

wherein  $u(k)$  = the correlation between the hierarchical sequence  $\tilde{h}$  and the received signal  $s(k)$  and  $u(k) = \sum_{j=0}^{m-1} h(j) \bullet s(k+j)$ ; and

wherein  $u_e(k)$  = the correlation between the error sequence  $\underline{h}_e$  and the received signal  $s(k)$  and  $u_e(k) = \sum_{j=0}^{m-1} h_e(j) \bullet s(k+j)$ .

14. (new) The method as defined in claim 13, further comprising decomposing the errored hierarchical sequence  $\tilde{h}$  into a sum of the hierarchical sequence  $\underline{h}$  and the error sequence  $\underline{h}_e$  so that the error sequence  $\underline{h}_e$  contains as few of said elements as possible that are different from zero.

15. (new) The method as defined in claim 11 or 13, wherein said signal transmission system is a mobile telephone system. --

***Reasons for Allowance***

4. Applicant's remarks filed February 20, 2006 (see pages 6-8) with respect to the rejection of claims 1, 4 and 5 have been fully considered. The applicant cancels claims 1-10 and has submitted claims 11-15. The claims 11-15 are now indicated allowable.

5. Claims 11-15 allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QG.  
March 14, 2006.

*Jean B. Corrielus*  
JEAN B. CORRIELUS  
PRIMARY EXAMINER

3-17-06